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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

ART UNIT

PAPER NUMBER

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/452,749

Applicant(s)

ZAGOSKIN, ALEXANDRE M.

Examiner

Douglas A Wille

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 28-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18, 28-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 12 – 18 and 39 – 51 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

3. Claim 12 shows a register with a bank and islands which are connected to each other with SETs. It is not known how such a structure would form a register and thus the device is not enabling of a register structure.

4. Claim 14 shows a register which consists of two banks with intervening islands, with the group being connected with JJs. It is not known how such a structure would form a register and thus the device is not enabling of a register structure.

5. Claim 15 shows a SET connection between each island and the second bank. It is not known how such a structure would form a register and thus the device is not enabling of a register structure. It is also not shown how to fabricate such a device nor the method of fabricating the SET nor what its structure is.

6. Similar remarks hold for claims 16, 17, 18 and 39 - 51.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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8. Claims 1 – 18 and 39 – 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. With respect to claim 12 and 14, it is not understood how such a device could function as a register. In particular it is not understood how the SET devices are fabricated or designed and is it not understood how they would function. Similarly for claims 39 – 51.

10. Claims 32, 38, 44, 47 and 51 refer to a parity key as a grounding mechanism. It is not understood what a parity key is. Is it parity check?

11. Mesoscopic is not understood. The specification states that a mesoscopic device is of such a size that a single Cooper pair is noticeable. What does noticeable mean? Compare this to the requirement on the size of a SET. Is the same limitation implied?

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 3 – 5, 28, 29, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al.

14. Char et al. show the formation of grain boundary JJs of high temperature superconductor material (see cover Figures and column 2, line 3 et seq.) where an island 310 is connected to a body 312.

15. With respect to claim 34, it would have been obvious to use a metal as a weak link since it is known in the art and would be a design alternative.

16. Claim 2, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Shnirman et al.

17. Char et al. show the basic device and Shnirman et al. show the use of a SET to read out a JJ q-bit (see Figure 1 and page 57, second column et seq.). It would have been obvious to modify the Char et al. device to include the SET to provide a readout for the Char et al. device.

18. Claims 6 and 8 – 10, 35, 39, 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Baechtold et al.

19. Baechtold et al. show a binary circuit consisting of a series/parallel arrangement of JJs (see Figure 4 and column 5, line 57 et seq.). It would have been obvious to use the Char et al. structure in the Baechtold et al. device to provide the JJs.

20. Claim 7, 11 and 12 – 18, 36, 37, 42, 43, 45, 46 and 48 - 50 in so far as they are understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Char et al. in view of Baechtold et al. and further in view of Shnirman et al.

21. With respect to claims 7, 11, 36, 37 and 43 it would have been obvious to use the Shnirman et al. structure to provide a readout for the device.

22. With respect to claims 12 – 18, 42, 45, 46 and 48 - 50 it would be obvious to apply the structures described above in various combinations since the basic combination is shown.

23. In so far as they are understood, claims 32, 38, 44, 47 and 51 are rejected under the art shown above since it would have been obvious to use a parity check.

Response to Arguments

1. Applicant's arguments filed 8/7/01 have been fully considered but they are not persuasive.
2. Applicant argues that a register is shown in the specification and states that, for instance, the register could be a shift register but note that a shift register would hold a series of 1's and 0's and would shift these digits under a clock pulse. How would this function be performed?
3. Applicant states that the SETs are well known in the field of superconducting devices. Is it being asserted that the SETs are superconducting? In addition, it is difficult to fabricate a SET because of the size constraints and it is not trivial to form a SET. Since no method of forming a SET is provided, it is not understood how the Applicant would fabricate one.
4. Applicant states that Char et al. do not show a mesoscopic device but, first, mesoscopic is not defined, and second, there is no reason why the Char et al. device could not be made arbitrarily small within the limits set by the superconducting phenomena which also apply to the claimed device.
5. Applicant states that there is no reason to combine Shnirman et al. with Char et al. but justification for this combination has been given above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO


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
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


OLIK CHAUDHURI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

daw 
September 26, 2001